

METHOD AND DEVICE FOR SUSPENDING POUCHESCross-Reference To Related Application

[001] This application is based on and claims priority from provisional patent Application
5 Number 60/429,764 filed on November 27, 2002.

Technical Field

[002] The present invention relates to pouches, and more particularly, to a method and device for suspending pouches.

Background Art

10 [003] The use of pouches for the storage of items is well known. Such pouches are used to store a variety of articles, from food to general household items including everything from craft supplies to children's toys. Generally, such pouches can be characterized by the presence or absence of integral resealing apparatus. Pouches that do not include any integral
15 resealing apparatus typically require a separate sealing member, such as a wire twist-tie, to seal the pouch. Often, the separate sealing member is lost or is not readily available to a user, and hence, the pouch is usually not properly sealed and/or is knotted by the user. In the latter case the subsequent untying of the pouch can be problematic or impossible as a practical matter. Pouches that include integral resealing apparatus overcome these problems but have
20 other potential disadvantages, particularly those pouches that require a user to pinch and run his finger and thumb over closure strips of the pouch. Specifically, when sealing such a pouch, the user may not be able to readily determine whether the pouch has been fully closed.

[004] Regardless of the pouch type, a pouch that is not sealed readily allows the contents of the pouch to spill out unless the pouch is carefully arranged and handled. In addition, many
25 different types and shapes of articles are often stored in such pouches, causing the pouches to be irregularly and/or differently shaped. When such pouches are placed together in a confined space, such as a cupboard, cabinet, drawer, shelf, refrigerator or the like, a disorganized condition can develop, preventing a user from easily locating a particular pouch. Further, as a user is attempting to locate a particular pouch, the pouch may be jostled, thereby
30 causing one or more pouches to fall off a supporting surface to the floor, resulting in breakage of the pouch and/or the articles stored therein and/or spilling of contents. Also, the

pouches are usually placed on top of one another, leading to an inefficient use of space. Still further, when pouches are stacked on top of each other in an unconfined location, the pouches tend to slide out of the stacked configuration and into a disorganized state. Pouches stacked on top also tend to conceal the contents of the pouches below.

5 [005] Attempts have been made to address the foregoing problems through the use of rack systems that suspend one or more pouches each from an open end thereof, thereby allowing the remainder of each pouch to hang freely below the rack regardless of the contents of the pouch.

10 [006] Lemke, U.S. Patent No. 5,467,949 discloses a clamping hanger for food bags. The hanger is used in conjunction with a snack bag, such as a potato chip bag, where one end of the bag is open and has no integral closing device. The clamping hanger includes a clamping member defining a slit that has a width narrower than the combined thicknesses of the walls of the snack bag. A user slides the open end of the bag into the slit and the bag is frictionally retained therein.

15 [007] Nocek et al., U.S. Patent No. 4,787,522 discloses a bag storage device. The device is designed for use with a non-slider type reclosable bag having interlocking profiles that have a greater thickness than the combined thicknesses of the side panels of the bag. The storage device comprises a member defining a slot that is narrower than the thickness of the interlocked profiles but wide enough that it will freely receive the combined thicknesses of the side panels of the bag. Furthermore, the slot has a length that is substantially as long as the bag. When the bag is inserted into the slot such that the profiles are disposed above the slot, the profiles engage the portions of the member forming the slot and support the bag.

20 [008] Similarly, Baglio, U.S. Patent Nos. 4,854,530 and 4,854,530 disclose a hanger system for non-slider type reclosable bags including a holding device having a plurality of pairs of spaced rails or fingers. The rails or fingers of each pair are spaced apart to define a slot having a width less than the thickness of interlocking profiles of the bags but greater than the combined thicknesses of side panels of the bags. Each of a number of bags may be slid into a corresponding slot with the profiles of the bag above the slot such that the profiles are brought into contact with the rails or fingers and are supported thereby.

[009] Johnson, U.S. Patent No. 5,960,957 discloses a storage system for non-slider type reclosable bags. The patent discloses a variety of rack systems for use with reclosable plastic bags. All of the rack storage systems disclosed in the patent utilize a plurality of slots each having a width less than the thickness of the interlocking profiles but greater than the combined thicknesses of the side panels of the bag. The rack systems disclosed include cylindrical, vertical and horizontal systems, all including a plurality of slots for holding multiple bags.

Summary of the Invention

[0010] In accordance with one aspect of the present invention, a suspension device for an item comprises a base member and a clamping assembly. The clamping assembly is mounted for sliding movement relative to the base member and is adapted to clamp an item.

[0011] According to a further aspect of the present invention, a suspension device for a pouch includes a housing and a clamping assembly slidable along a linear path with respect to the housing wherein the clamping assembly has a first clamping member and a second clamping member. The second clamping member is movable with respect to the first clamping member and is adapted to clamp the pouch therebetween.

[0012] According to another aspect of the present invention, a suspension device for a pouch includes a housing having first, second, and third pairs of elongate recesses and a clamping assembly slidable along a linear path with respect to the housing. The clamping assembly includes a first clamping member having a grasping portion and guide portion comprising first and second pairs of guide members respectively disposed in the second and third pairs of elongate recesses. The clamping assembly further includes a second clamping member having a flexible guide rail disposed in the first pair of elongate recesses.

[0013] According to yet another aspect of the present invention, a method for suspending a pouch includes the steps of providing a clamping assembly mounted for sliding movement in a housing and adapted to clamp the pouch. The method further includes the steps of opening the clamping assembly, placing the pouch in the clamping assembly, and simultaneously closing and sliding the clamping assembly into the housing such that the pouch is suspended from the clamping assembly.

[0014] Other aspects and advantages of the present invention will become apparent upon consideration of the following detailed description.

Brief Description of the Drawings

- 5 [0015] FIG. 1 is an isometric view of a suspension device according to the present invention having a pouch suspended therefrom;
- [0016] FIG. 2 is a trimetric view of the housing of FIG. 1;
- [0017] FIG. 3 is a sectional view taken along the lines 3-3 of FIG. 2;
- [0018] FIG. 4 is an isometric view of the suspension device of FIG. 1 with the clamping
10 assembly extended outwardly from the housing;
- [0019] FIG. 5 is a side elevational view of the suspension device of FIG. 4;
- [0020] FIG. 6 is an isometric view of the first clamping member of FIG. 4;
- [0021] FIG. 7 is a rear end elevational view of the first clamping member of FIG. 5;
- [0022] FIG. 8 is a side elevational view of the second clamping member of FIG. 4;
- 15 [0023] FIG. 9 is an isometric view of the second clamping member of FIG. 4;
- [0024] FIG. 10 is a fragmentary enlarged side elevational view of the suspension device of FIG. 1 with the clamping assembly retracted into the housing;
- [0025] FIG. 11 is a fragmentary enlarged view of FIG. 5;
- [0026] FIG. 12 is a front elevational view of the second clamping member of FIG. 4;
- 20 [0027] FIG. 13 is a front elevational view of the suspension device of FIG. 1;
- [0028] FIG. 14 is a fragmentary, enlarged, front elevational view of a portion of the suspension device of FIGS. 1 and 13;
- [0029] FIG. 15 is an isometric view of the second clamping member attached to the first clamping member;
- 25 [0030] FIG. 16 is a fragmentary isometric view of the device of FIG. 1; and
- [0031] FIG. 17 is a bottom elevational view of the housing of FIG. 1 with the clamping assembly removed therefrom.

Description of the Preferred Embodiment

[0032] Referring now to FIG. 1, a suspension device 22 includes a base member 24 and a clamping assembly 26. The suspension device 22 is used to suspend a pouch 28 preferably with one or more items 29 contained therein. The base member 24 and clamping assembly
5 26 are constructed of a thermoplastic material but other materials may be employed.

[0033] The base member 24 suspends the clamping assembly 26 and comprises a housing 30 having mounting member 31 and first and second side walls 32, 34 depending from the mounting member 31, thereby defining a channel 36.

[0034] As seen in FIGS. 2, 3, and 17, the mounting member 31 includes at least one
10 mounting hole 38, and preferably three mounting holes 38a -38c and a tab 40. Each mounting hole 38a-c preferably has an oval or round shape or may comprise a slot. The tab 40 is disposed at one end 42 of the mounting member 31 and preferably has a triangular shape and extends into the channel 36.

[0035] Referring to FIGS. 2 and 3, the first and second side walls 32, 34 include a first pair
15 of elongate recesses 43, 44, a second pair of elongate recesses 45, 46, and a third pair of elongate recesses 47, 48. The recess 43 is defined by first and second flanges or rails 49, 50 that extend outwardly from an inner surface 51 of the first side wall 32. The flanges or rails 49, 50 include sloped portions 52, 53. The recess 45 extends into the side wall 32 from the inner surface 51 thereof. The recess 47 extends into the side wall 32 from an outer surface 58
20 thereof. The recesses 43, 45, and 47 are all parallel to the mounting member 31.

[0036] In like fashion and as seen in FIG. 3, the recesses 44, 46, and 48 extend in a direction parallel to the mounting member 31. The recess 44 is defined by third and fourth flanges or rails 59, 60 that extend outwardly from an inner surface 61 of the side wall 34. The flanges or rails 59, 60 include sloped portions 62, 63 (FIG. 5). The recess 46 (FIG. 3) extends into
25 the inner surface 61 whereas the recess 48 extends into an outer surface 65 of the side wall 34.

[0037] The recesses 43, 45, and 47 and the rails 49, 50 are mirror images of, but otherwise identical to, the recesses 44, 46, and 48 and the rails 59, 60, respectively. The recesses 44, 46, and 48 are aligned top-to-bottom with the recesses 43, 45, and 47, respectively, such that

the recesses 43-46 are disposed above lower ends 66, 67 of the side walls 32, 34, respectively, and the recesses 47, 48 are disposed at the lower ends 66, 67.

[0038] Referring now to FIGS. 4-6, the clamping assembly 26 includes a first clamping member 68 and a second clamping member 70 movable with respect to the first clamping member 68. The first clamping member 68 includes an elongate body 72 having a top portion 74, a grasping portion 76 at one end 78, and a guide portion 80 in sliding engagement with the second and third pairs of elongate recesses 45-48 (As seen in FIG. 16). The grasping portion 76 includes walls 84 defining an opening 85 wherein a user may grasp the walls 84 and move the clamping assembly 26 in and out of the housing 30 or hold the first clamping member 68 in position while moving the second clamping member 70 as noted in greater detail hereinafter.

[0039] With specific reference to FIGS. 6 and 7, the guide portion 80 includes a pair of openings 86a, 86b (FIG. 6), and first and second pairs of guide members 87a, 87b and 88a, 88b, respectively. The first pair of guide members 87a, 87b and second pair of guide members 88a, 88b are disposed in the second elongate recesses 45, 46 and third elongate recesses 47, 48, respectively (as seen in FIG. 16). The guide members 87a and 88a are preferably mirror images of the guide members 87b and 88b, respectively. When the clamping assembly 26 is moved outwardly relative to the housing 30 to a first extreme position as seen in FIG. 5, the first pair of guide members 87a, 87b contact inner end surfaces 89a and 89b (FIG. 3) partly defining the recesses 45, 46. This contact prevents the clamping assembly 26 from moving outwardly and disengaging from the housing 30 in a first direction.

[0040] Referring now to FIGS. 8 and 9, the second clamping member 70 includes a pin 90 disposed in the openings 86a, 86b respectively. The second clamping member 70 further includes an arm portion 92 and a stop member 93 having a cam portion 95 and a stop surface 96. A plate member 98 attaches the stop member 93 to the arm portion 92. The second clamping member 70 is capable of pivoting about the pins 90 relative to the first clamping member 68 within a range of motion relative to the first clamping member 68. (The extremes of the range of motion are seen in FIGS. 4 and 15). As seen in FIG. 10, when the second clamping member 70 is disposed on the first clamping member 68, the former is disposed at a first angular limit of zero degrees relative to the latter. Additionally, as seen in FIGS. 5, 11,

and when the clamping assembly 26 is moved outwardly relative to the housing 30, the cam surface 95 contacts the tab 40, thereby causing the second clamping member 70 to rotate relative to the first clamping member 68. Continued outward movement of the clamping assembly 26 relative to the housing 30 causes the stop surface 96 to move into contact with a further surface 97 whereupon the second clamping member 70 is disposed at a second angular limit of 30 degrees relative to the first clamping member 68. FIGS. 9, 12, and 14

illustrate the second clamping member 70 in greater detail. The arm portion 92 includes flexible guide rails 103, 104 and first and second inner jaw portions 105, 106 surrounded by first and second outer jaw portions 107, 108 with two gaps 109, 110 spaced therebetween.

As seen in FIG. 13, the inner jaw portions 105, 106 and flexible guide rails 103, 104 either engage or are spaced very close to the top portion 74 of the first clamping member 68 when the second clamping member 70 is disposed at the first angular limit.

[0041] As seen in FIGS. 12-14, the flexible guide rails 103, 104 are mirror images of one another (i.e., symmetric with respect to a center line) and further include integral first and second grooves 111, 112 that are triangular in shape and spaced equidistantly from edges 114, 116 of the guide rails 103, 104. As the clamping assembly 26 is moved into the housing 30 ends 117, 118 (FIG. 9) of the guide rails 103, 104, respectively, slide against the sloped portions 52, 62 and are deflected or bent downwardly into the first pair of elongate recesses 43, 44. More specifically, as seen in FIGS. 15 and 16, a dimension A measured from a center

line 122 of the guide member 88 to a center line 123 of the flexible guide rail 103, before deflection of the guide rail 103, is slightly greater than a dimension B measured from a center line 124 of the elongate recess 44 to a center line 125 of the elongate recess 44. (Because the recesses 43, 45, and 47, the rails 49, 50 and the guide members 87, 89 are mirror images of the recesses 44, 46, and 49, the rails 59, 60 and the guide members 88, 90, there are

corresponding dimensions A and B on the side of the device 22 opposite that shown in FIGS. 15 and 16.) Thus, the sloped portions 52, 62 of the flanges or rails 49, 50 guide the ends 117, 118 into the recesses 43, 44. Continued insertion of the clamping assembly 26 into the housing 30 eventually causes the full lengths of the guide rails 103 and 104 to rotate about the grooves 111 and 112, respectively, and flatten out, thereby forcing the second clamping member 70 downwardly relative to the first clamping member 68.

[0042] Any method for mounting the suspension device 22 to a surface including but not limited to the methods shown in FIG. 17 may be used. A user can drive a shank of a nail or screw through the mounting holes 38 into a surface to which the suspension device 22 is attached. Mounting holes could alternatively be provided in side walls 32, 34 of the housing 30, in which case the housing 30 could be mounted to a vertical (or other) surface by fasteners of any suitable type. Additionally or alternatively, any type of adhesive such as silicone adhesives, epoxy adhesives, and the like, or other fastening means (hook and loop fasteners, double-sided tape, etc...) could be used to secure the suspension device 22 to a surface in any orientation. Alternatively, a hook and/or one or more clips may be adhered or otherwise secured to the housing 30 to hang or secure the device 22 to or from a support structure, such as a cabinet or closet shelf, a refrigerator shelf, a refrigerator, wire rack or the like.

[0043] Referring now to FIG. 4, once the device 22 is mounted, a pouch 28, preferably containing items 29 therein, may be suspended from the housing 30. The user holds the grasping portion 76 and pulls the clamping assembly 26 out of the housing 30. The guide portion 80 slides along a linear path defined by the elongate recesses of the housing 30 until the cam portion 95 contacts the tab 40, whereupon a cam surface 95a of the cam portions 95 contacts a ramp surface 40a of the tab 40. Continued outward movement of the clamping assembly 26 causes the cam surface 95a to slide up on the ramp surface 40a of the tab 40, thereby pivoting the second clamping member 70 upwardly away from the first clamping member 68. Eventually, each of the first guide members 87a, 87b contacts the inner surfaces 53, 64 of each side wall 32, 34 whereupon further outward movement is prevented. As seen in FIG. 11, and as noted in greater detail above, the stop surface 96 prevents movement of the second clamping member 70 beyond the second angular limit of thirty-degrees with respect to the first clamping member 68. The user places an open end 140 of the pouch 28 over the top portion 74 of the first clamping member 68 and pushes the clamping assembly 26 into the housing 30 a short distance, thereby spacing the surface 95a from the surface 40a. The user then pushes the clamping assembly 26 along the linear path into the housing 30 whereby the flexible guide rails 103, 104 contact the sloped portions 52, 62 and are deflected downwardly

as noted above to secure the open end 140 within the clamping assembly 26 and thereby suspend the pouch 28 from the housing 30.

Industrial Applicability

5 [0044] As should be evident, one may use single or ganged multiple suspension devices that are secured to a vertical support surface, a horizontal support surface or a non-horizontal and non-vertical support surface in any configuration and/or orientation desired by the user. In the use of a non-horizontal support surface multiple pouches may be maintained in a desired arrangement including side-by-side, (i.e., a shingled arrangement) and cascading (i.e., an arrangement where the bags are disposed one above the other and either touching or not touching one another).

10 [0045] The suspension device of the present invention can be made from any suitable rigid material such as plastics, glass, metal, wood and similar substances. The only important features of the materials of construction are that they be relatively rigid, be inexpensive, and can be readily formed into a desired shape. Suitable plastic materials include polypropylene, polyethylene, styrene, nylon and a wide variety of other similar homopolymers and copolymer materials. Any suitable molding technique can be used to form these devices, including injection molding, and thermoforming. The suspension devices can be formed in multiple parts that are snapped or pressed together or glued or fused together during manufacture and assembly.

20 [0046] The suspension device allows a user to address a variety of home storage problems. First, the suspension device enables a user to store and organize pouches to fully utilize available storage space. For example, in a refrigerator, closet, pantry, or the like, the present invention allows a user to hang pouches from the underside of a shelf, cabinet, overhanging counter or other support surface thus freeing up shelf space for the storage of other items. This type of use also ensures that the pouches are clearly in view and always in the same location, thus increasing the likelihood that any perishable food will be utilized before spoilage occurs.

25 [0047] Another advantage of the present invention is to ensure a seal of the pouch that is being used so that the contents will remain safely and securely within the pouch. This advantage is especially useful in relation to food storage since the food within the pouch will

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remain fresh longer if it is sealed from the surrounding environment. This type of use also gives the advantage that users with diminished manual dexterity are more easily able to utilize open pouches.

5 [0048] Numerous modifications to the present invention will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is presented for the purpose of enabling those skilled in the art to make and use the invention and to teach the best mode of carrying out the same. The exclusive rights to all modifications which come within the scope of the appended claims are reserved.